

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

Amendments to the Claims

Please cancel Claims 1-27 without disclaimer or prejudice to applicants' right to pursue the subject matter of these claims in future divisional or continuation application, and add new Claims 28-54 as set forth below.

28. (New) A substrate plate, comprising a microplate made of a plastic material, having an array of wells arranged in rows and columns, the bottom of at least one well being provided by a porous substrate, characterized in that each porous substrate is incorporated into the well by means of a thermal bond.

29. (New) The substrate plate according to claim 28, wherein the porous substrates comprise oriented flow-through channels.

30. (New) The substrate plate according to claim 28, wherein each well is formed in a discrete protrusion, projecting from one face of the microplate, a separate porous substrate being bonded to the distal end of each protrusion facing away from the face, in such a manner that the porous substrates are spaced apart from each other.

31. (New) The substrate plate according to claim 28, wherein the porous substrates are made of a metal oxide material.

32. (New) The substrate plate according to claim 31, wherein the porous substrates are made of aluminium oxide.

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

33. (New) The substrate plate according to claim 28, wherein the plastic material comprises a cyclic olefin copolymer.

34. (New) A method of manufacturing the substrate plate according to claim 28, comprising heating the porous substrates and bringing the microplate and porous substrates into contact with each other.

35. (New) The method according to claim 34, comprising supplying heat to the porous substrates while the microplate is in contact with the porous substrates.

36. (New) The method according to claim 34, comprising pressing the microplate and the porous substrates against each other.

37. (New) The method according to claim 36, comprising cooling the porous substrates while pressing the microplate and the porous substrates against each other.

38. (New) The method according to claim 34, comprising cooling the porous substrates by decreasing the rate at which heat is supplied to the porous substrates in a controlled manner.

39. (New) The method according to claim 34, comprising arranging a plurality of porous substrates in an array of rows and columns, corresponding substantially to at least part of the array of rows and columns in which the wells in the microplate are arranged, bringing the microplate and array of porous substrates into alignment in such a manner that each porous substrate is aligned opposite the bottom of a well, and bringing the

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

microplate into contact with the porous substrates in such a manner that each porous substrate closes off the bottom of one well.

40. (New) The method according to claim 39, comprising cutting the substrates from a sheet of porous substrate material.

41. (New) The method according to claim 40, wherein the step of cutting the substrates from the sheet of porous substrate material comprises placing the sheet of substrate material in a holder, comprising a plurality of collection sites for receiving substrates cut from the sheet of porous substrate material, the collection sites being arranged in an array of rows and columns corresponding substantially to at least part of the array of rows and column in which the wells in the microplate are arranged, wherein the step of arranging the plurality of porous substrates comprises receiving the porous substrates cut from the sheet of porous substrate material in the collection sites.

42. (New) The method according to claim 34, comprising providing a sheet of porous substrate material comprising the substrates, bonding the sheet to the microplate, and removing all porous substrate material interconnecting the porous substrates.

43. (New) The method according to claim 34, comprising bonding a microplate in which each well is formed in one of an array of spaced protrusions, arranged in rows and columns and projecting from one face of the microplate, wherein each porous substrate is bonded to the distal end of each protrusion facing away from the face, the method comprising mounting the microplate in a guide adapted to envelope at least parts of

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

side walls connecting the face to the distal end of a corresponding one of the protrusions, such that at least part of a protrusion is supported by the guide.

44. (New) The method according to claim 34, comprising pressing the microplate against the porous substrates by applying a support against the microplate, comprising an array of support protrusions arranged in rows and columns and corresponding substantially to the array of wells, each support protrusion being shaped to engagingly fit inside the well, such that walls of each well are supported from inside the well by the support protrusions, when inserted into the wells.

45. (New) A system for conducting bioassays, comprising a substrate plate with a number of wells, and an incubation device for holding the plate, characterized in that the substrate plate comprises a microplate with an array of wells arranged in rows and columns, wherein the bottom of each well is a porous microarray substrate, wherein the incubation device comprises an incubation chamber for holding the microplate and a cover for sealing the incubation chamber, said incubation device having a heat block with an array of openings, each opening adapted to receive a well of the microplate, wherein a sealing gasket is provided for individually sealing each well of the microplate, and in that the system comprises a substrate plate according to claim 28.

46. (New) An apparatus for manufacturing a substrate plate according to claim 28, comprising a heating device for heating the porous substrates and a press for pressing the microplate and the porous substrates against each other.

47. (New) The apparatus according to claim 46, wherein the press comprises a heated plate, the heated plate comprising a plurality of protruding rims, each

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

arranged in a shape corresponding to a perimeter of a porous substrate and substantially centered on a well of the microplate, the rims being arranged to contact a part of a face of a porous substrate facing away from the microplate near the perimeter of the porous substrate.

48. (New) The apparatus according to claim 46, suitable for manufacturing a substrate plate in which the porous substrates lie substantially in a plane, wherein the heating device comprises a heating surface arranged to contact a face of the porous substrates facing away from the microplate.

49. (New) The apparatus according to claims 46, further comprising a controller for decreasing the rate at which heat is supplied to the porous substrates in a controlled manner.

50. (New) The apparatus according to claim 46, wherein the press comprises a support to be applied against the microplate and a guidance mechanism for aligning the support relative to the porous substrates in a plane perpendicular to the direction of pressing.

51. (New) The apparatus according to claim 50, wherein the guidance mechanism comprises spacing means for limiting the movement of the support in the direction of pressing to a pre-determined distance from the substrates.

52. (New) The apparatus according to claim 46, wherein the press comprises a support to be applied against the microplate and the support comprises an array of support protrusions arranged in rows and columns and corresponding substantially to the array of wells, each support protrusion being shaped to engagingly fit inside the well, such

Applicants : Herman Jacobus Blok
Marinus Gerardus Johannus Van Beuningen
Appl. No. : 10/511,922 (National Stage of PCT/EP03/50114)
I.A. Filing Date : April 17, 2003

that walls of each well are supported from inside by the support protrusions, when inserted into the wells.

53. (New) The apparatus according to claim 46, suitable for bonding a microplate in which each well is formed in one of an array of spaced protrusions, arranged in rows and columns and projecting from one face of the microplate, and arranged to bond each porous substrate to the distal end of each protrusion facing away from the face, which apparatus comprises a guide for mounting the microplate, adapted to envelope at least parts of side walls connecting the face to the distal end of a corresponding one of the protrusions, such that at least part of a protrusion is supported by the guide.

54. (New) The apparatus according to claim 53, wherein each guide comprises one or more overhangs, arranged to cover a part of a surface on the distal end of at least one protrusion to which a porous substrate is to be bonded, the covered part being complementary in shape to a porous substrate.